

## REMARKS

The Examiner is thanked for the performance of a thorough search. By this amendment, Claims 1, 10, 15, 40, 45, 49, 50, 55, 59, 60, 63, and 66 have been amended. No claims have been added or canceled. Hence, Claims 1–2, 7–8, 10–12, 15, 40–43, 45–47, 49–53, 55–57, and 59–68 are pending in this application.

All issues raised in the Office Action are addressed hereinafter.

### I. LACK OF CLARITY IN THE OFFICE ACTION

As a preliminary matter, in rejecting Claims 1–2, 7–8, 10–12, 15, 40–43, 45–47, 49–53, 55–57, and 59–68, the Office Action did not specify exactly what elements of *DeMoss* corresponds to or constitutes each element or feature of the claims. In an Office Action “the particular part relied on must be designated as nearly as practicable . . . . The pertinence of each reference, if not apparent, **must be clearly explained.**” MPEP § 707 (citing 37 C.F.R. §1.104(c)(2)).

The present citations to *DeMoss* do not provide the Applicants with adequate notice or reasonable particularity with respect to the bases of the rejections. The pertinence of certain passages is neither apparent nor explained. Large portions of *DeMoss* have been cited as disclosing entire clauses of the claims without any indication of which features discussed in the portions supposedly correspond to which various elements of the clauses. Without an explanation of how the cited passages disclose the elements of the various claims, Applicants’ ability to respond to the allegations of the Office Action has been severely diminished. As a result, the Applicants have had to engage in guesswork to determine the bases of the rejections.

Applicants’ arguments below are based upon their best efforts to understand the intent of the Office Action.

## II. CLAIM REJECTIONS BASED ON 35 U.S.C. § 103

Claims 1–2, 7–8, 10–12, 15, 40–43, 45–47, 49–53, 55–57, and 59–68 were rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Pat. No. 6,421,711 to Blumenau et al. (hereinafter *Blumenau*) in view of U.S. Patent No. 5,778,411 to DeMoss et al. (hereinafter *DeMoss*). Applicants traverse the rejection. Reconsideration is respectfully requested.

### INDEPENDENT CLAIM 1

Claim 1, as set forth in the listing of claims, clarifies that the method features:

- a control processor receiving a request to allocate storage to the host processor;
  - wherein the request to allocate storage indicates that the allocated storage should be at least a **requested size**; and
- the control processor associating one or more logical units one or more storage units to with the host processor by:
  - the control processor selecting the one or more logical units from a plurality of logical units stored on one or more storage units,
    - wherein said selecting comprises **determining that the one or more logical units, when combined, are of a cumulative size** that is at least as great as the requested size;
  - the control processor configuring a gateway device to map the one or more logical units to the host processor,
    - wherein the gateway device is a physical device;
  - the control processor configuring the one or more storage units to give the host processor access to the one or more logical units;
- wherein the **control processor is a separate device from each of the gateway device**, the host processor, and the one or more storage units; and
- wherein the gateway device is a separate device from each of the control processor, the host processor, and the one or more storage units.

A control processor may implement the steps of Claim 1, for example, by receiving a request to allocate storage to a host processor in a virtual server farm. The request may indicate a size of storage to allocate to that host processor. For example, the request may indicate that the

host processor requires 30GB of storage. The control processor and the host processor may be connected to a network of storage devices. Each of these storage devices may have one or more logical units available for allocation to the host processor. To fulfill the request for allocation of storage, the control processor may attempt to identify one or more of these logical units that, cumulatively, have at least 30GB of storage space. Once it has selected the one or more logical units, the control processor may configure both a gateway device and the storage devices on which the selected logical units reside, so that the host processor may access allocated storage on the selected logical units via the gateway device. The gateway device may be connected to the host processor by a standard port, such as a SCSI port, so that host processor believes that it is physically connected to a single logical unit of the requested size. Thus, the control processor may facilitate dynamic allocation of storage devices to processors in a virtual server farm in a manner entirely transparent to the host processor.

By contrast, *Blumenau* teaches a technique of restricting access to storage volumes in a data network. *Blumenau* at col. 1, lines 45–51. *Blumenau*'s technique relies on a storage controller to which each host in the data network is connected. *Blumenau* at col. 2, lines 45–48. The storage controller provides virtual ports to each host. *Blumenau* at col. 2, lines 48–55. By controlling the volumes accessible over each virtual port, the storage controller is able to restrict which storage volumes are accessible to which hosts. *Blumenau* at col. 3, lines 8–18.

By further contrast, *DeMoss* discloses an improvement to virtual data storage subsystems, such as RAID arrays. *DeMoss* at col. 1, lines 13–17 and 42–44. Specifically, *DeMoss* teaches a technique of “storing virtual blocks of data in compressed form on blocks of physical storage devices within the virtual data storage system.” *DeMoss* at col. 1, lines 17–20. Architecturally, *DeMoss*'s “virtual data storage subsystem” is essentially the same as RAID, and thus it “hides from the computer system the details of the physical storage of data.” *DeMoss* at col. 1, lines 54–57.

The combination of *Blumenau* and *DeMoss* fails to teach or suggest a number of features of Claim 1.

(1) The references do not disclose a “control processor [that] is a separate device from . . . the gateway device”

For example, neither *Blumenau* nor *DeMoss* teach or suggest “wherein the **control processor is a separate device** from each of the **gateway device**, the host processor, and the one or more storage units.” The Office Action acknowledges that *Blumenau* fails to teach a control processor that is separate from a gateway device. Instead, the Office Action alleges that *DeMoss* suggests a control processor that is separate from a gateway device.

The Office Action is mistaken. While the Office Action correctly observes that *DeMoss*’s host system is separate from *DeMoss*’s virtual storage controller, the Office Action fails to identify any element of *DeMoss* that is a control processor or a gateway device. Applicants assume that the Office Action believes, as it does with *Blumenau*, that *DeMoss*’s virtual storage controller is both a gateway device and a control processor within the meaning of Claim 1. If this is the Office Action’s assumption, then it is clear that *DeMoss* does not teach or suggest “a control processor that is a separate device from . . . the gateway device,” as the virtual storage controller is a single device.

Furthermore, in alleging that *DeMoss* teaches “wherein the **control processor** is a separate device from each of the **gateway device**, the **host processor**, and the **one or more storage units**,” the Office Action inherently alleges that *DeMoss* features **four** separate types of devices. However, *DeMoss*’s invention only comprises **three** separate types of physical devices: a host system, a virtual storage controller, and storage units. *See, e.g.*, FIG. 1. Thus *DeMoss* fails to support the Office Action’s allegation.

(2) The references do not disclose “determining that the one or more logical units, when combined, are of a cumulative size”

Neither *Blumenau* nor *DeMoss* teach or suggest “determining that the **one or more logical units, when combined**, are of **a cumulative size that is at least as great as the requested size**.” *Blumenau* is, in fact, silent on the issue of allocating storage of “a requested size,” and thus is likewise silent as to “determining that the one or more logical units, when combined, are of a cumulative size.”

Applicants note that this step of present Claim 1 bears similarity to Applicants' prior version of Claim 10, which recited that the "request to allocate storage specifies a first amount of storage." The Office Action alleges that *Blumenau* teaches this step of the prior version of Claim 10 in *Blumenau*'s request for dynamic allocation of "a single logical volume." However, present claim 1 clarifies that the request for storage is a request for storage of a "requested size." *Blumenau*'s request for storage, on the other hand, is a request to "mount" specifically identified logical units, such as "host\_lun1" or "host\_lunN." *Blumenau* at col. 33, lines 39–52. Each of these logical units may be any size, and in fact the mounting host may be entirely unaware of the size of the requested logical units. *Blumenau* thus features no mechanism whereby a host may request for dynamic allocation of storage of "a requested size." For this reason, it would be impossible for *Blumenau* to "determin[e] that the one or more logical units, when combined, are of a cumulative size that is at least as great as the requested size."

This element is also missing from *DeMoss*. In fact, *DeMoss* does not discuss logical units, much less "determining that the one or more logical units, when combined, are of a cumulative size that is at least as great as the requested size."

For at least the foregoing reasons, the combination of *Blumenau* and *DeMoss* fails to teach or suggest at least one limitation of independent Claim 1. Therefore, the combination of *Blumenau* and *DeMoss* does not render Claim 1 obvious under 35 U.S.C. § 103. Reconsideration is respectfully requested.

#### **INDEPENDENT CLAIMS 40 AND 50**

Independent Claims 40 and 50 also recite the features quoted for Claim 1, although Claims 40 and 50 are expressed in another format. Claims 40 and 50 share all the features described above for Claim 1, and therefore Claims 40 and 50 are allowable over the combination of *Blumenau* and *DeMoss* for the same reasons given above for Claim 1. Reconsideration is respectfully requested.

#### **DEPENDENT CLAIMS 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, AND 59–68**

Claims 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, and 59–68 depend from Claims 1, 40, or 50, and include each of the above-quoted features by dependency. Thus, the

combination of *Blumenau* and *DeMoss* also fails to teach or suggest at least one feature found in Claims 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, and 59–68. Therefore, the combination of *Blumenau* and *DeMoss* does not render obvious Claims 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, and 59–68. Reconsideration of the rejection is respectfully requested.

In addition, each of Claims 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, and 59–68 recite at least one feature that independently renders it patentable. For example, Claim 10 recites that “identifying two or more logical units of the one or more storage units that, when combined, are of the cumulative size.” Neither *Blumenau* nor *DeMoss* suggest such a feature.

Also, Claim 15 recites that “the request to allocate storage specifies a type of storage to be allocated.” Neither *Blumenau* nor *DeMoss* suggest such a feature.

Also, Claim 60 recites that “wherein the host processor does not know which one or more logical units in the plurality of logical units are associated with the host processor.” The Office Action acknowledges that *Blumenau* does not teach such a feature. Instead, the Office Action alleges that *DeMoss* suggests such a feature with its virtual storage layer because the “physical storage is hidden from the hosts.” However, *DeMoss* only virtualizes blocks and clusters. *DeMoss* does not virtualize “logical units” on *DeMoss*’ storage device.

To expedite prosecution in light of the fundamental differences already identified, further arguments for each independently patentable feature of Claims 2, 7–8, 10–12, 15, 41–43, 45–47, 49, 51–53, 55–57, and 59–68 are not provided at this time. Applicants reserve the right to further point out the differences between the cited art and the novel features recited in the dependent claims.

### III. ADDED CLAIMS / AMENDMENTS

The added claims and amendments to the claims do not add any new matter to this application. The amendments to Claims 1, 40, and 50 are supported in Applicants’ original specification by at least page 21, line 20 – page 22, line 5; page 24, lines 1–10; page 32, lines 4–7; and page 34, line 8 – page 35, line 5. The amendments to the other claims address informalities. The amendments to the claims were made to improve the readability and clarity of the claims and not necessarily for any reason related to patentability.

## CONCLUSION

For the reasons set forth above, all of the pending claims are now in condition for allowance. The Examiner is respectfully requested to contact the undersigned by telephone relating to any issue that would advance examination of the present application.

A petition for extension of time, to the extent necessary to make this reply timely filed, is hereby made. If applicable, a check for the petition for extension of time fee and other applicable fees is enclosed herewith. If any applicable fee is missing or insufficient, throughout the pendency of this application, the Commissioner is hereby authorized to any applicable fees and to credit any overpayments to our Deposit Account No. 50-1302.

Respectfully submitted,  
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